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10/578,149

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EXAMINER

BARROW, AMANDA J

ART UNIT

PAPER NUMBER

1729

MAIL DATE

DELIVERY MODE

01/21/2011

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/578,149

Applicant(s)

SLIVAR, DJURO

Examiner

AMANDA BARROW

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 December 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2-5 and 7-18 is/are pending in the application.
- 4a) Of the above claim(s) 7-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-5, 17 and 18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### **Continued Examination Under 37 CFR 1.114**

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/18/2010 has been entered. Claims 17 and 18 were amended. Claim 19 was cancelled.

2. The texts of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action issued on 10/29/2009.

### **Claim Analysis**

3. The claims have been amended to recite that the bottom part is "uniformly and evenly bent along an entire circumferential section of the cylindrical body." Support for this language can be found in Figures 5-10 in which the mandrel and wound sheet/separator material 10 is rotated along an entire circumference of the cylindrical body to form the bottom part which is uniformly and evenly bent along an entire circumferential section of the cylindrical body as claimed.

For interpretation processes, the prior art does not have to teach a method in which the bottom part is "uniformly and evenly bent along an entire circumferential section of the

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cylindrical body," but rather a final structure in which there is a circumferential section that is uniformly and evenly bent as the claims are directed to an apparatus and not a method.

#### **Claim Rejections - 35 USC § 112**

4. The claim rejection under 35 U.S.C. 112, first paragraph, on claim 19 is withdrawn because the claim has been cancelled.

The claim rejection under 35 U.S.C. 112, second paragraph on claims 17-19 and 2-5 are withdrawn because the claims have been amended or cancelled.

#### **Claim Rejections - 35 USC § 102/ 35 USC § 103**

5. Claims 17 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yamashita et al. (US 6,270,833).

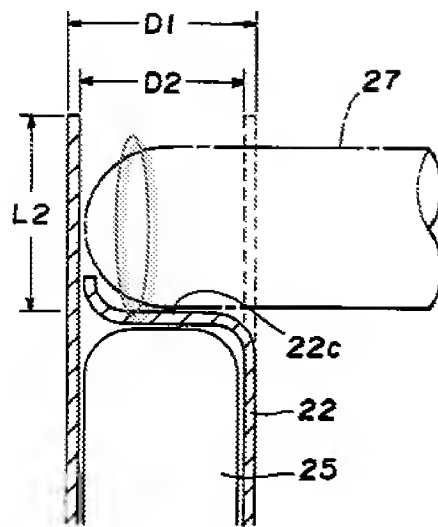
Regarding claim 17, the claim language, "...and with the wound layers of said bottom part being uniformly and evenly bent along an entire circumferential section of the cylindrical body and fused by heat" is product-by-process language. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (see MPEP § 2113). As long as the prior art teaches a separator product which has an entire circumferential section of the

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cylindrical body uniformly and evenly bent, the prior art will read on the claims; Applicant's process is not given patentable weight in the claims.

Furthermore regarding claim 17, Yamashita discloses a separator for an alkaline cell and a method of producing same. Yamashita teaches that the separator base paper 21 is rotated in the horizontal direction by a mandrel to form a cylindrical formation of three windings and then the cylindrical formation was subject to a heat bonding at side and bottom portions to form a cylindrical structure with a closed end (column 4, line 66 through column 5, line 5). The base paper 21 is made of vinylon fiber/rayon fiber/vinylon binder (i.e., a "non-woven" sheet material"). As illustrated in Figures 5C and 5D, the bottom part of the cylindrical separator is formed by an integral extension of cylindrical body 22. Yamashita teaches that a semi-spherical bottom portion 22a is formed into the cylindrical body 22 thus resulting in circumferential sections of the cylindrical body bottom part which are uniformly and evenly bent as claimed.

To make the position of the Examiner clear, Figure 7 of Yamashita is reproduced below with a circle surrounding a circumferential section of separator 27 which is uniformly and evenly bent:



Because Yamashita's bottom part is a semi-sphere (i.e., the bottom-most part is a half sphere as illustrated), all points around a circumferential section will be uniformly and evenly bent as all points around a circumferential section will have the same degree of curvature. Furthermore, the final separator products as shown in Figures 5D and 7 illustrate its wrinkle-free continuous inner and outer surfaces. The dotted line of cylindrical separator 22 in Figure 5D indicates the substantial uniform thickness of the separator.

Regarding claim 18, Yamashita illustrates that the bottom part 22a of cylindrical separator 22 has a slightly outward curved shape (see Figure 5D and 7). Yamashita also refers to the bottom portion 22a as the "semi-spherical bottom portion" (column 7, line 65 through column 8, line 2).

**Claim Rejections - 35 USC § 103**

6. Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al. (US 6,270,833) as applied to claims 17 and 18 above, and further in view of Haruhisa et al. (JP 07245091) and Gozdz et al. (US 2002/0110728).

Regarding claim 2, Yamashita teaches that the base paper 21 is made of vinylon fiber/rayon fiber/vinylon binder (i.e., "a non-woven sheet") (column 4, line 66 through column 5, line 5). Yamashita does not disclose whether or not the separator base paper 21 consists of a plurality of sheets; however, Haruhisa discloses analogous art of providing a cylindrical separator out of non-woven sheet material for use as an insulating element in a battery (abstract). Haruhisa discloses that the separator material sheet 31 of nonwoven fabric consists of multiple layers which are then wound to form a cylindrical separator 32 (abstract and paragraph 8). There is no use of binder in the winding process, and thus, the sheets are wound together without any binder as recited in the claim (see paragraph 8).

Therefore, it would have been obvious to a person of ordinary skill to modify the non-woven sheet material used as separator base material 21 of Yamashita to include a layered structure of multiple non-woven cloths because Haruhisa discloses analogous art in which the separator base material 31 that forms the cylindrical separator consists of a layered sheet structure and that the separator made provides stable production and a quality product (paragraph 15) as well as prevention of separator breakage (paragraph 12).

Furthermore, it is advantageous to configure a plurality of separator sheets wound together without the use of binder as taught by Haruhisa because it is well known in the art, as taught by Gozdz, that binder clogs the pores of separator sheets leading to an alteration in the

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microporous structure and a general decline of electrolyte flow through the separator (paragraph 12). Furthermore, the application of binder also unproductively increases the cell mass, thus lowering its effective energy storage capacity (paragraph 12).

Therefore, it would have been obvious to a person of ordinary skill to modify the non-woven sheet material used as separator base material 21 of Yamashita to include a layered structure of multiple non-woven cloths that uses no binder because Haruhisa discloses this configuration and Gozdz teaches that the application of binder clogs pores leading to a local filling of the micropores of the separator and a decline in flow through the separator as well as an increase in the cell mass leading to a lowered effective energy storage capacity (paragraph 12).

Regarding claim 4, Yamashita teaches that the base paper 21 is made of vinylon fiber/rayon fiber/vinylon binder (i.e., "a non-woven sheet") (column 4, line 66 through column 5, line 5). Yamashita does not disclose whether or not the turns are affixed to each other with binder; however Haruhisa discloses analogous art of providing a cylindrical separator out of non-woven sheet material for use as an insulating element in a battery (abstract). Haruhisa discloses that the separator material sheet 31 of nonwoven fabric consists of multiple layers which are then wound to form a cylindrical separator 32 (abstract and paragraph 8). There is no use of binder in the winding process, and thus, the sheets are wound together without any binder (see paragraph 8).

Therefore, it would have been obvious to a person of ordinary skill to modify the non-woven sheet material used as separator base material 21 of Yamashita to include a layered structure of multiple non-woven cloths that does not affix the sheets with any binder material because Haruhisa discloses analogous art in which the separator base material 31 that forms the



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cylindrical separator consists of a layered sheet structure which is wound together without the use of binder and teaches that the separator made provides stable production and a quality product (paragraph 15) as well as prevention of separator breakage (paragraph 12).

Furthermore, it is advantageous to configure a plurality of separator sheets wound together without the use of binder as taught by Haruhisa because it is well known in the art, as taught by Gozdz, that binder clogs the pores of separator sheets leading to an alteration in the microporous structure and a general decline of electrolyte flow through the separator (paragraph 12). Furthermore, the application of binder also unproductively increases the cell mass, thus lowering its effective energy storage capacity (paragraph 12).

Therefore, it would have been obvious to a person of ordinary skill in the art to modify the winding of the separator without the use of binder because Haruhisa discloses this configuration and Gozdz teaches that the application of binder clogs pores leading to a local filling of the micropores of the separator and a decline in flow through the separator as well as an increase in the cell mass leading to a lowered effective energy storage capacity (paragraph 12).

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al. (US 6,270,833) in view of Haruhisa et al. (JP 07245091) as applied to claims 2 and 4 above, and further in view of Devitt (US 3,897,266).

Regarding claim 3, modified Yamashita teaches that the separator material sheet 31 is made of layers of either woven or nonwoven fabric (i.e., two semi-permeable membranes), but does not disclose the addition of cellophane to the separator material sheet 31. Devitt discloses analogous art of an alkaline battery cell which contains a separator for preventing the metallic

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conduction between opposite polarity electrode plates (column 4, lines 43-45). Devitt discloses that conventional non-woven porous separators generally lack uniformity, are overly porous and readily allow and promote growth of zinc dendrites through the porous interstices (column 5, lines 31-40). Devitt teaches that preferred materials are cellulosic materials as they resist attack by electrolyte and are resistant to oxidation and have suitable ranges for air permeability and electrolyte absorption; however, cellophane lacks mechanical strength to properly conform to the contour of the zinc plate (column 5, lines 1-16 and lines 29-31). Thus, Devitt discloses that the separator used in the invention is a cellophane membrane next to the non-woven porous fabric separator such as Pellon and that this layering of the cellophane and non-woven fabric membranes attenuates dendritic growth and prevents metallic conduction between the positive and negative plates (column 5, lines 50-55). Devitt does not disclose the use of any binder between the sheets.

Therefore, it would have been obvious to a person of ordinary skill in the art to modify the separator layer of modified Yamashita to include a layer of cellophane in addition to the multi-layered separator sheet because Devitt teaches that this attenuates dendritic growth and prevents metallic conduction between positive and negative plates (Devitt, column 5, lines 50-55).

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al. (US 6,270,833) as applied to claims 17 and 18 above, and further in view of Tomantschger et al. (US 5,300, 371).

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Regarding claim 5, Yamashita does not disclose a thermoplastic sealant arranged at the central zone on the outside of said bottom part 22a; however, Tomantschger discloses an alkaline cell in which a thermoplastic sealant may be applied to the bottom of the separator to prevent electrical contact between the negative electrode 14 and the cell container or can 12(column 13, lines 1-9).

Therefore, it would have been obvious to a person of ordinary skill in the art to modify the cell of Yamashita to include a thermoplastic sealant at the central zone on the outside of the bottom part as taught by Tomantschger in order prevent electrical contact between the negative electrode and the cell container (Tomantschger, column 12, lines 1-9).

### **Response to Arguments**

9. Applicant's arguments filed 11/18/2010 have been fully considered but they are not persuasive.

*Applicant's remaining principal arguments are*

(a) Claim 17 recites that the bottom part of the cylindrical body is uniformly and evenly bent along an entire circumferential section to form the curved shape with respective wrinkle-free, continuous inner and outer surfaces and a substantially uniform thickness. These latter characteristics of the separator directly result from the method according to the invention wherein the bending and shaping takes place while the cylinder is rotating and are not taught or made obvious by the disclosure of Yamashita. The Examiner has stated that Yamashita teaches that the bottom part 22a of the cylindrical separator is semi-cylindrical and is shown in Figure 5D as having wrinkle-free inner and outer surfaces and being of a uniform thickness. However,

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it is submitted that the drawings of the Yamashita patent are schematic in nature and there is no discussion or even mention of wrinkle-free surfaces or uniform thickness of the bottom closure in the Yamashita patent. The mere incidental schematic showing of Yamashita cannot be considered anticipation of the claimed features.

(b) The method of Yamashita will inevitably cause wrinkles and results in a non-even thickness as there are parts of the bottom where the wall thickness counts twice. In addition, claim 17 specifically recites how the bottom part is formed which is clearly different from Yamashita's method.

In response to Applicant's arguments, please consider the following comments.

(a) "Drawings and pictures can anticipate claims if they clearly show the structure which is claimed. In re Mraz, 455 F.2d 1069, 173 USPQ 25 (CCPA 1972). However, the picture must show all the claimed structural features and how they are put together. Jockmus v. Leviton, 28 F.2d 812 (2d Cir. 1928). **When the reference is a utility patent, it does not matter that the feature shown is unintended or unexplained in the specification** (See MPEP § 2125 and MPEP § 2121.04). Therefore, as indicated by MPEP sections 2125 and 2121.04, the drawings of Yamashita can be used to anticipate the present claims even though there is no explanation in the specification.

(b) There is no reason to believe that the method of Yamashita will cause wrinkles in the surface; furthermore, the disclosure of Yamashita indicates that the surfaces are wrinkle free (see Figures 5D and 7).

The Applicant argues that the bottom will be uneven as portions of the wall thickness count twice in Yamashita. The present claims recite, "a substantially uniform thickness." Office personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. In *re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). As illustrated in Applicants' disclosure, the bottom portion of the separator which has "a substantial uniform thickness" has portions which "count twice" as they overlap (see Figures 5-10; specifically Figure 7). Thus, the Examiner's interpretation of the bottom part of the separator having a "substantial uniform thickness" is sound. Furthermore, because the claim recites, "substantially," the bottom separator surface does not have to be exactly uniform leaving room for what is considered to be a "uniform thickness."

Lastly, the Applicant indicates that their method is different from that of Yamashita. As indicated in the present rejection, "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In *re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (see MPEP § 2113). As long as the prior art teaches a separator product which has an entire circumferential section of the cylindrical body uniformly and evenly bent, the prior art will read on the claims; Applicant's process is not given patentable weight in the claims.

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMANDA BARROW whose telephone number is (571)270-7867. The examiner can normally be reached on 7:30am-5pm EST. Monday-Friday, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ula Ruddock can be reached on 571-272-1481. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/AMANDA BARROW/  
Examiner, Art Unit 1795

/Ula C Ruddock/  
Supervisory Patent Examiner, Art Unit 1729